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FORT ERIE

water pollution control plant

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JAN 10 1969

ONTARIO WATER
RESOURCES COMMISSION

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ONTARIO WATER RESOURCES COMMISSION

Division of Plant Operations

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ONTARIO WATER RESOURCES COMMISSION

801 BAY STREET, TORONTO 5

OFFICE OF THE GENERAL MANAGER

Members of the Fort Erie Local Advisory Committee,
Town of Fort Erie.

Gentlemen;

We are happy to present you with the 1967 Operating Summary for the Fort
Erie Water Pollution Control Plant, OWRC Project No. 2-0039-59.

Your co-operation with our staff throughout the year has been appreciated.
Only with such co-operation can the war against water pollution be waged
effectively.

Yours very truly,

A handwritten signature in dark ink, appearing to read "D. S. Caverly", written over the typed name.

D. S. Caverly,
General Manager.

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JAN 10 1969

ONTARIO WATER
RESOURCES COMMISSION



ONTARIO WATER RESOURCES COMMISSION

801 BAY STREET
TORONTO 5

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CHAIRMAN

J. H. H. ROOT, M.P.P.
VICE-CHAIRMAN

TELEPHONE 365-

D. S. CAVERLY
GENERAL MANAGER
W. S. MACDONNELL
COMMISSION SECRETARY

General Manager,
Ontario Water Resources Commission.

Dear Sir:

I am pleased to submit to you the 1967 Operating Summary for the Fort Erie Water Pollution Control Plant, OWRC Project No. 2-0039-59.

The summary reviews progress during the year, outlines operating problems encountered and summarizes in graphs, charts and tables all significant flow and cost data.

Yours very truly,

A handwritten signature in cursive script, reading "D. A. McTavish".

D. A. McTavish, P. Eng.,
Director,
Division of Plant Operations.

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FOREWORD

● This operating summary has been prepared in order to acquaint readers with the management of the project during 1967. The efficiency of the plant's operation is reflected in a general review. Significant financial details are recorded, and technical performance is illustrated by graphs and charts.

The summary should answer two salient questions. Are the project's facilities adequate at this time? And can the project meet future requirements?

The Regional Operations Engineer is primarily responsible for the preparation of the report, and will be pleased to answer any questions regarding it.

Most of the material for the graphs and charts was compiled by the statistics section of the Division of Plant Operations, with the final versions of the graphs being drawn by the draughting section of the Division of Sanitary Engineering. Cost data were provided by the Division of Finance.

It will be evident from the report that all of these groups co-operated with substantial success.

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FORT ERIE

water pollution control plant

operated for

THE TOWN OF FORT ERIE

by the

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Assistant Director: C. W. Perry
Regional Supervisor: A. C. Beattie
Operations Engineer: R. S. McKittrick

801 Bay Street Toronto 5

'67 REVIEW

The operating cost for the year was \$27,797.55 as opposed to \$26,123.29 in 1966. The operating cost per million gallons of sewage treated increased slightly to \$45.78 from \$43.29.

On the basis of the 1967 sampling program, it is apparent that the organic strength of the raw sewage is slightly greater than the average sewage received in 1966. The cost per pound of BOD removed decreased in 1967 from 19 cents per pound to 15 cents.

A total of 607.17 million gallons of raw sewage was treated at the plant during 1967 as compared to 603.5 million gallons in 1966. The average daily flow for the year was 1.66 million gallons or 92% of the plant design dry weather flow of 1.8 million gallons. The dry weather design flow was exceeded 41% of the time during 1967 indicating a high degree of infiltration into the municipal sewers. This infiltration was confirmed by the raw sewage strength which was, on the average, relatively weak.

Maintenance at the plant and pumping station was during the past year of a high calibre. The primary digester mixers were repaired with a resulting increase in methane gas production during the latter part of 1967.

The plant staff consists of a chief operator and an operator. Supervision at the plant is on a five day a week basis for 8 hours per day with call-in on weekends and statutory holidays.

PROJECT COSTS

NET CAPITAL COST (Estimated)		\$807,050.52
DEDUCT - Payments from Municipalities	\$ 55,000.00	
- Portion Financed by CMHC (Estimated)	<u>535,794.31</u>	<u>590,794.31</u>
Long Term Debt to OWRC		<u>\$216,256.21</u>
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1967		\$ <u>22,696.19</u>
Debt Retirement		\$ 4,364.00
Reserve		5,145.01
Interest Charged		12,195.15
Net Operating		27,797.55
TOTAL		<u>\$ 49,501.71</u>

RESERVE ACCOUNT

Balance at January 1, 1967	\$ 18,451.13
Deposited by Municipality	5,145.01
Interest Earned	<u>1,160.37</u>
	\$ 24,756.54
Less Expenditures	<u> </u>
Balance at December 31, 1967	<u>\$ 24,756.54</u>

MONTHLY OPERATING COSTS

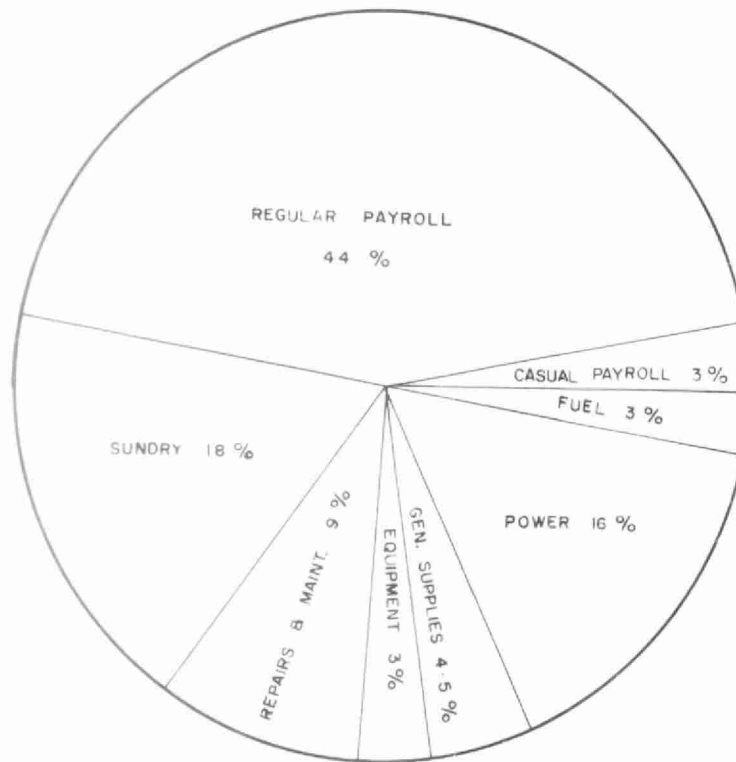
MONTH	TOTAL EXPENDITURE	PAYROLL	CASUAL PAYROLL	FUEL	POWER	GENERAL SUPPLIES	EQUIPMENT	REPAIRS & MAINTENANCE	* SUNDRY
JAN	1,009.53	838.95				27.61	124.25		18.72
FEB	1,425.39	838.95		15.24	378.51	12.07			52.06
MARCH	2,611.72	1,584.50	44.70	16.37	357.51	153.10	29.13	223.30	91.27
APRIL	2,449.50	986.84		22.48	325.54	39.52	420.47	311.71	215.54
MAY	4,725.52	1,002.40		77.58	377.90	162.07	54.51	44.26	2936.50
JUNE	1,939.72	912.38	70.84	37.7	121.47	9.76	147.79	37.20	35.71
JULY	1,731.50	912.38	267.55	27.71	77.77	121.08		13.25	113.43
AUG	2,129.27	1,613.27	214.75	11.27	11.27	73.29		243.89	63.15
SEPT	2,713.77	1,428.17	127.91	42.1	421.11	113.23		477.50	69.30
OCT	1,731.45	936.42		21.35	375.13	14.55		108.54	314.47
NOV	3,596.57	903.58	38.55	52.38	1211.77	144.35	26.15	414.62	710.12
DEC	1,686.66	900.04		117.12	20.27	110.25		556.11	167.06
TOTAL	27,797.55	12,255.11	858.30	735.74	4150.47	1246.33	831.97	2485.23	5068.66

* SUNDRY INCLUDES SLUDGE HAULING COSTS WHICH WERE \$7,600
BRACKETS INDICATE CREDIT

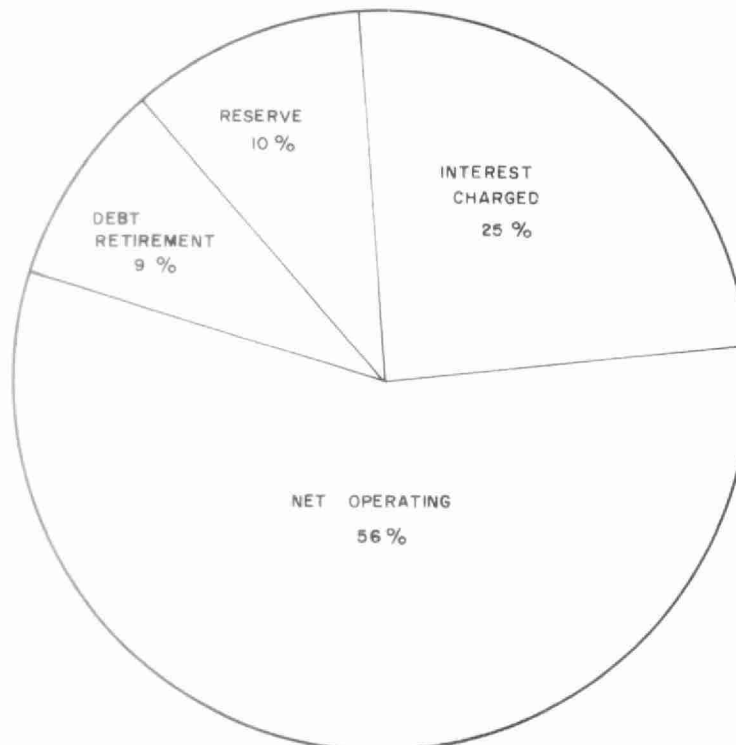
YEARLY OPERATING COSTS

YEAR	M.G. TREATED	TOTAL COST	COST PER MILLION GALLONS	COST PER LB OF BOD REMOVED
1964	512.92	\$23880.73	\$ 46.57	13 CENTS
1965	535.40	\$24836.97	\$ 46.38	12 CENTS
1966	603.50	\$26123.20	\$ 43.29	19 CENTS
1967	607.17	\$27797.55	\$ 45.78	15 CENTS

1967 OPERATING COSTS



TOTAL ANNUAL COST



Process Data

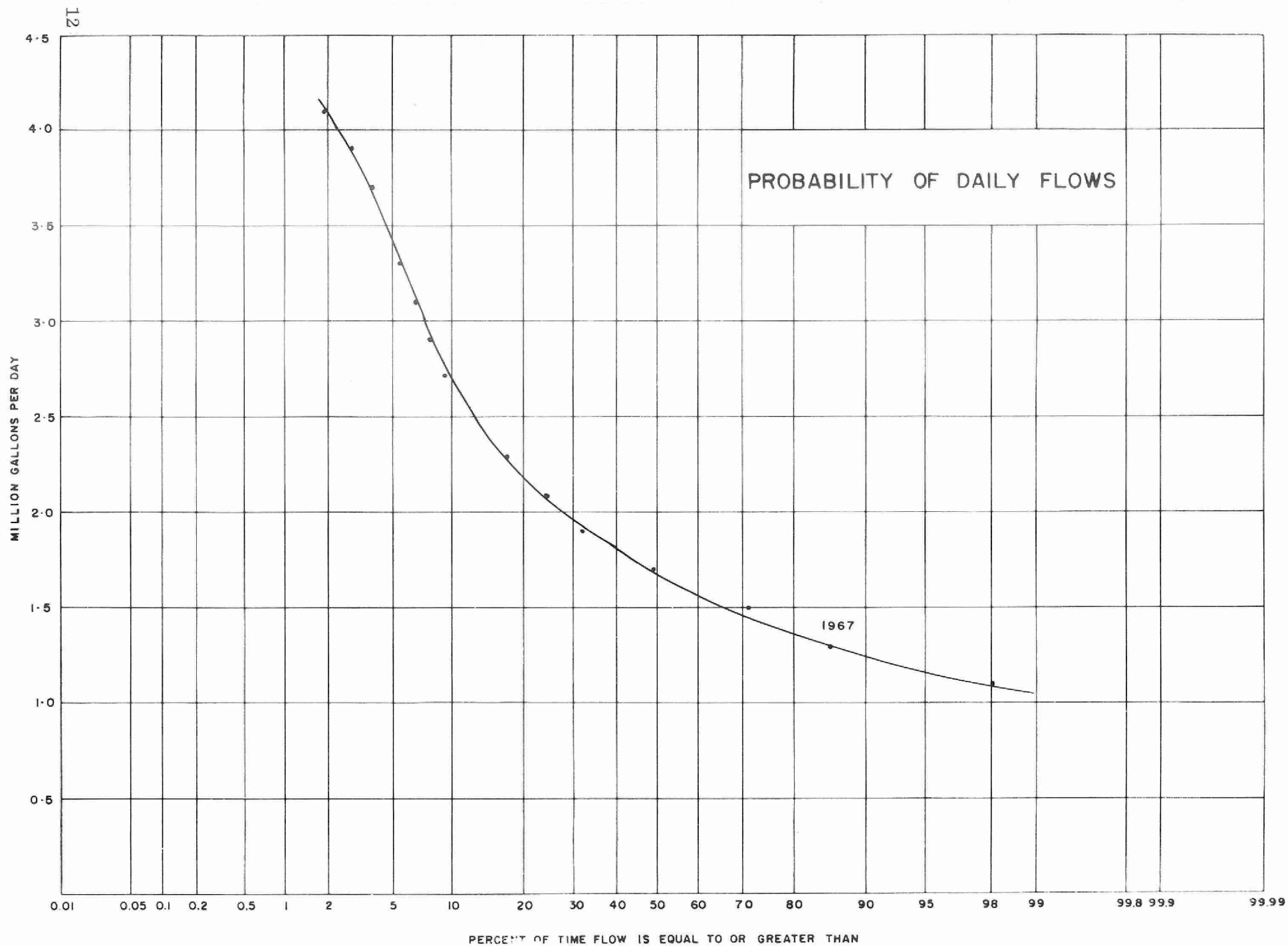
The total raw sewage flow received at the plant in 1967 was 607.17 million gallons representing an increase of less than 1% compared to the total flow of 603.5 million gallons in 1966.

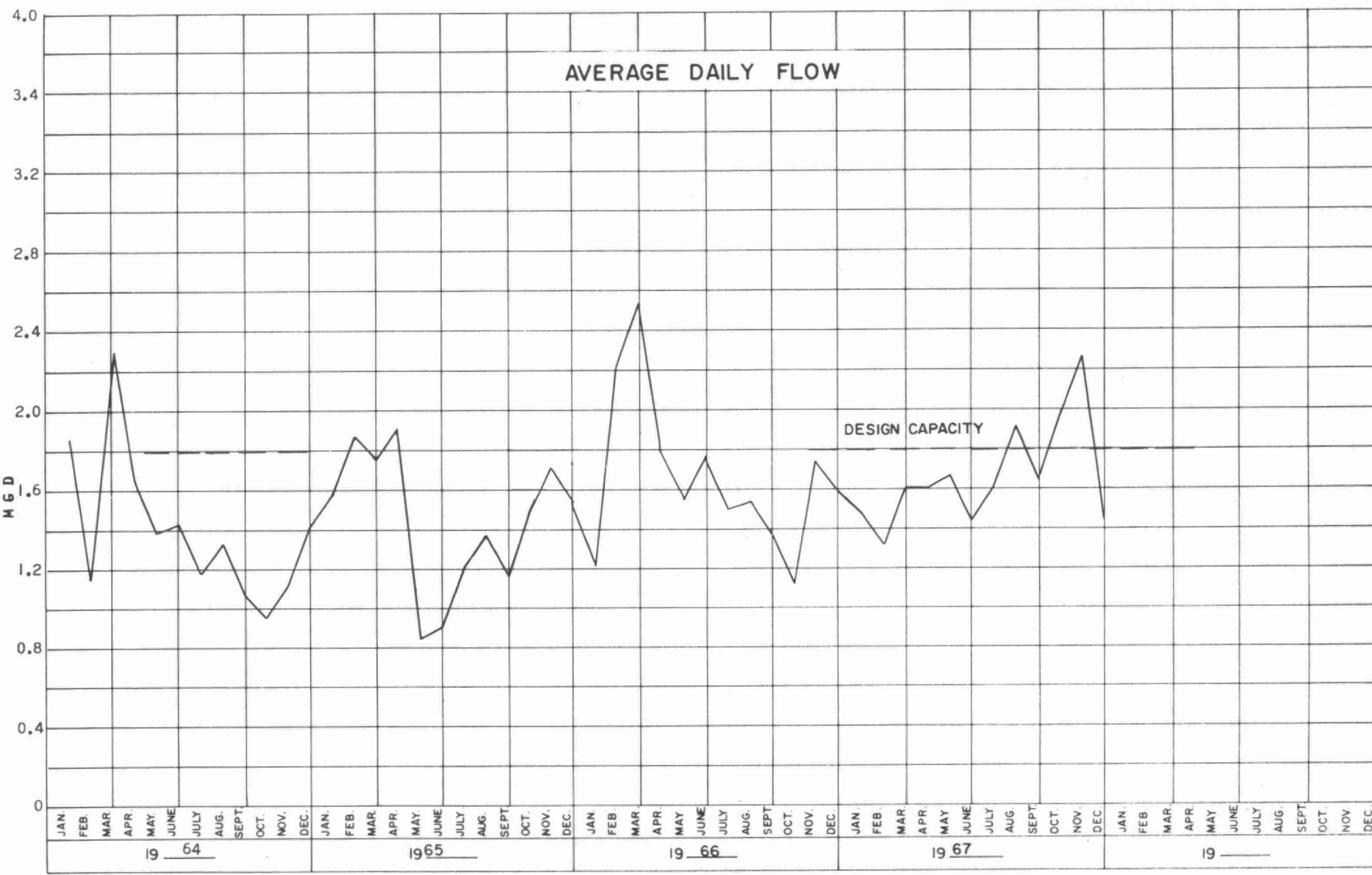
The highest monthly flow of 67.68 million gallons occurred in November while the lowest flow of 37.10 million gallons occurred in February. The highest daily recorded flow was 5.80 million gallons in November and the lowest was 0.52 million gallons in December.

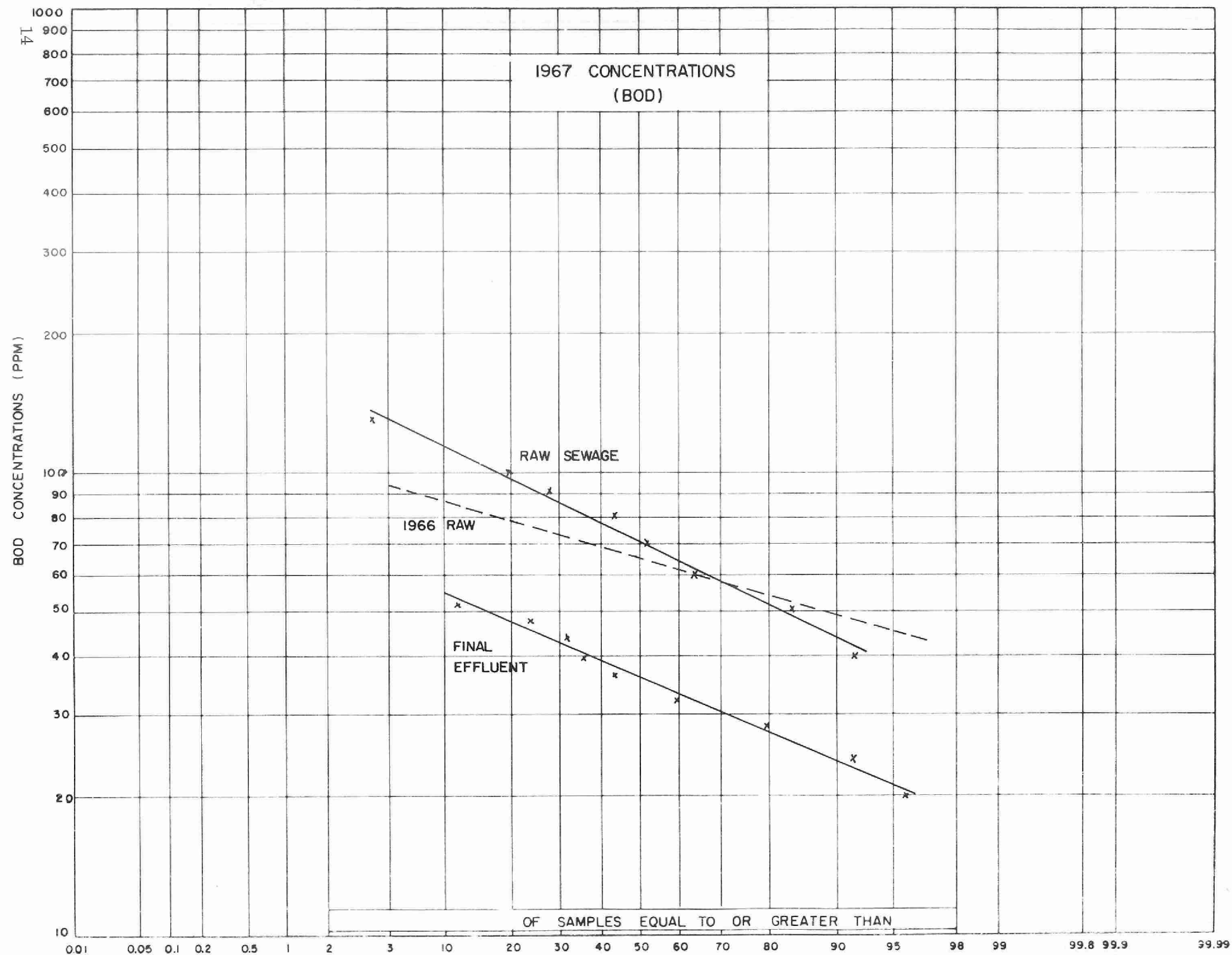
The dry weather design flow was exceeded 41% of the time as compared to 31% of the time in 1966.

FLOW DATA

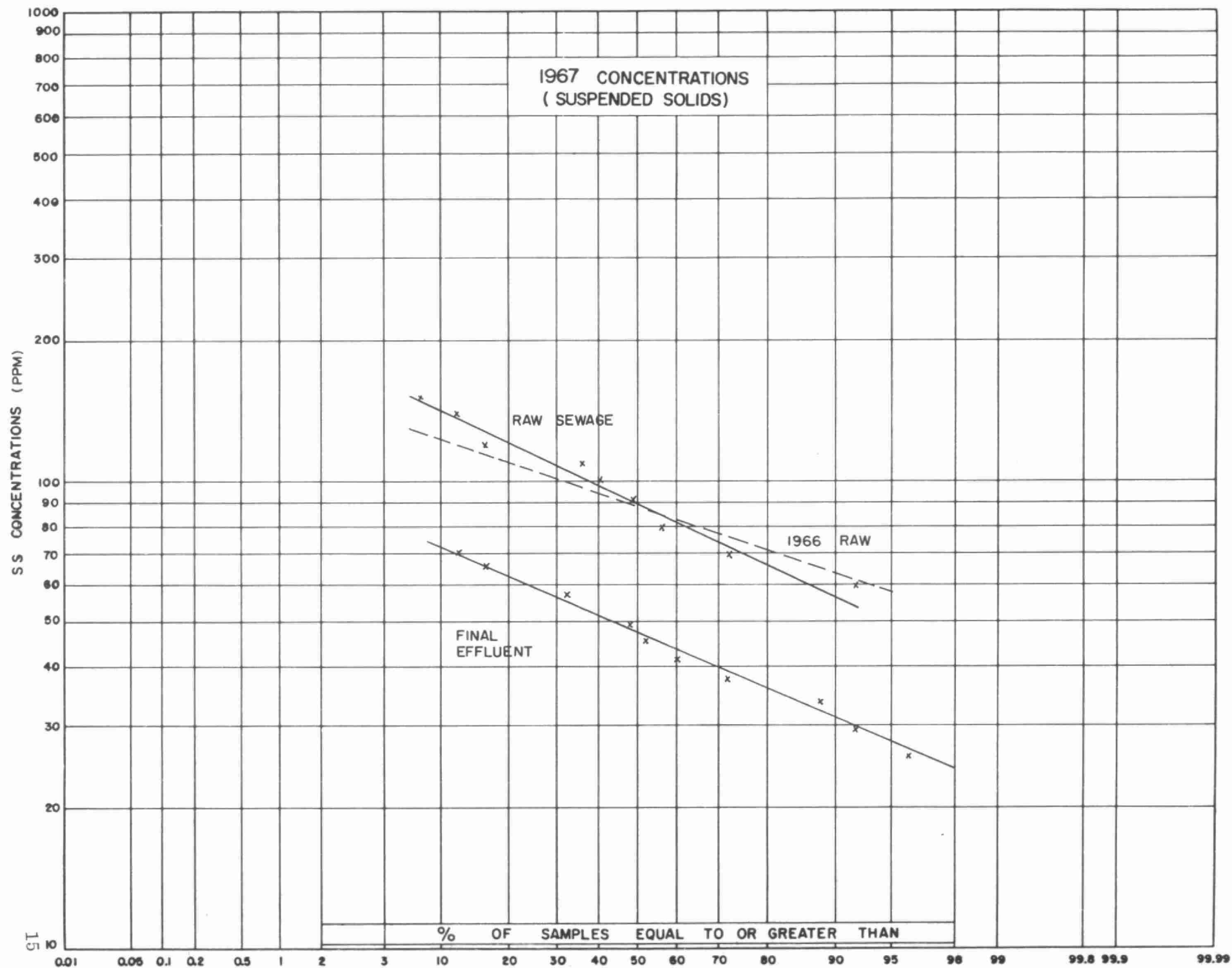
Month	Total Flow (MG)	Avg. Daily Flow (MGD)	Max. Daily Flow (MG)	Min Daily Flow (MG)	Max. Rate (MGD)
January	45.18	1.47	2.55	.95	4.9
February	37.10	1.32	4.10	.91	5.9
March	49.49	1.60	2.36	.95	5.0
April	48.00	1.60	3.21	.95	5.9
May	51.57	1.66	4.06	1.02	5.8
June	43.18	1.43	3.93	.88	5.6
July	50.02	1.61	3.15	1.20	5.9
August	59.34	1.91	3.16	1.40	5.9
September	49.46	1.65	2.10	1.37	5.8
October	61.45	1.98	5.80	1.77	6.0
November	67.68	2.26	3.99	1.21	5.9
December	44.70	1.44	2.96	.52	5.7
Total	607.17	1.66			
Average					

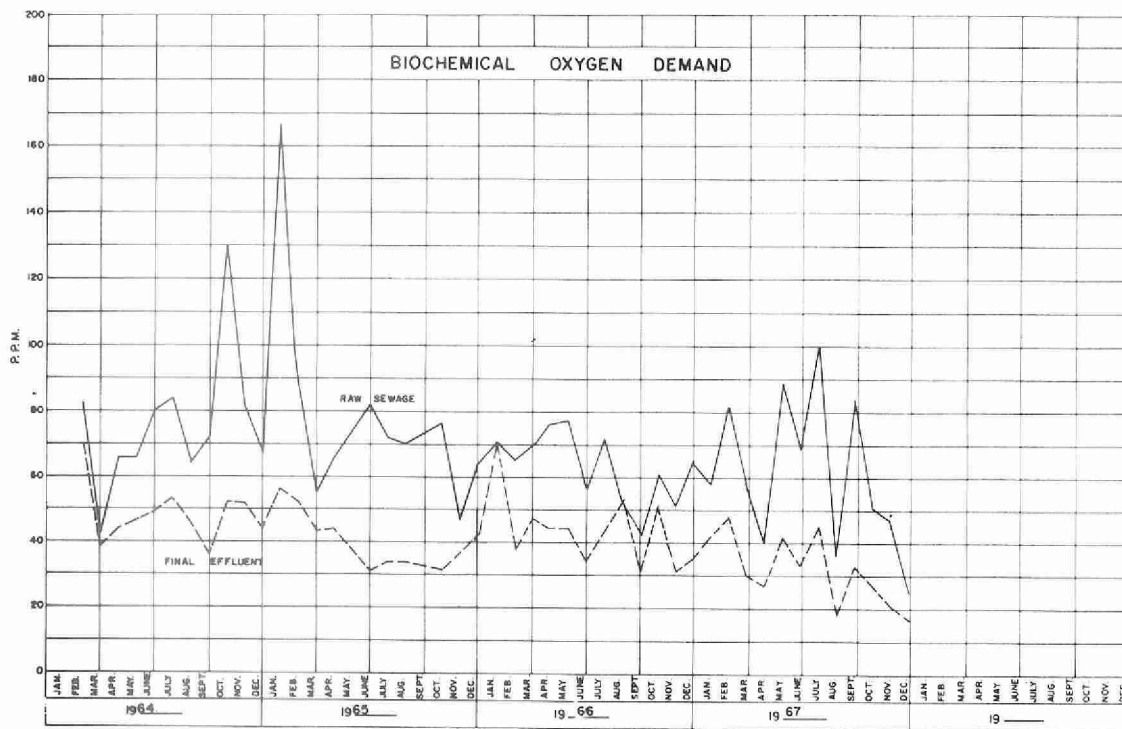




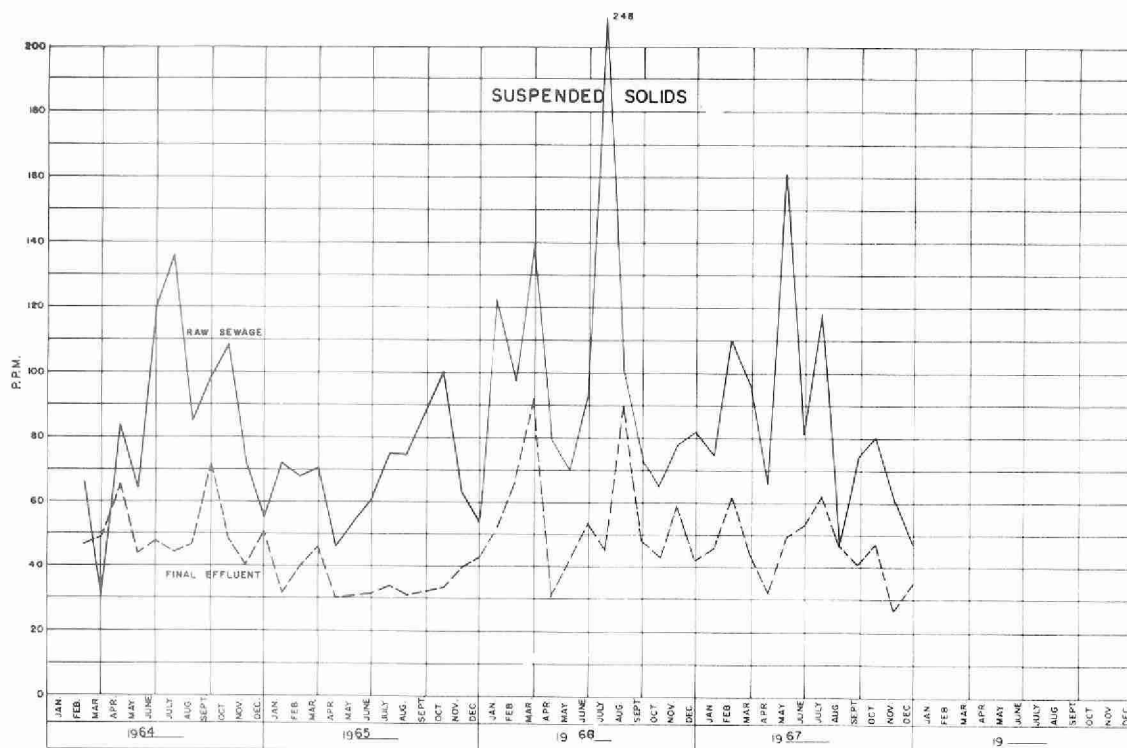


1967 CONCENTRATIONS (SUSPENDED SOLIDS)





MONTHLY VARIATIONS



GRIT, B.O.D AND S.S. REMOVAL

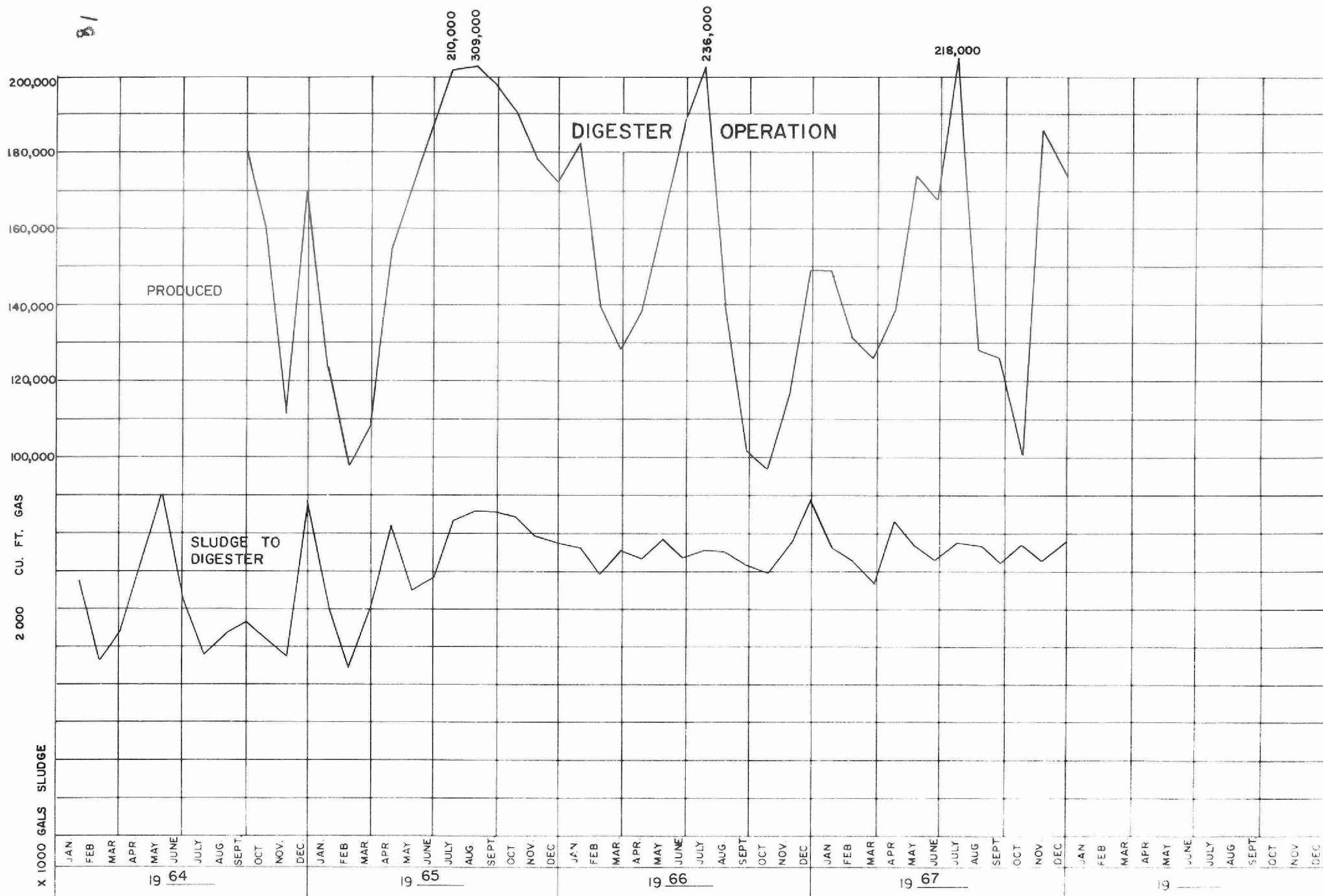
MONTH	B. O. D.				S. S.				GRIT REMOVAL CU. FT.
	INFLUENT PPM.	EFFLUENT PPM.	% REDUCTION	TONS REMOVED	INFLUENT PPM.	EFFLUENT PPM.	% REDUCTION	TONS REMOVED	
JAN.	58	42	27.6	3.61	75	46	38.7	6.55	2
FEB.	82	48	41.5	6.31	110	62	43.6	8.90	5
MAR.	58	30	48.3	6.93	97	44	54.6	13.11	5
APR.	40	27	32.5	3.12	66	32	51.5	8.16	4
MAY	89	42	52.2	12.12	161	49	69.6	28.88	3
JUNE	69	33	54.2	9.71	81	53	34.6	9.93	3
JULY	100	45	55.0	13.76	118	62	47.4	14.01	8
AUG.	36	18	50.0	5.34	47	47	-	-	14
SEPT.	84	33	60.7	12.61	74	41	44.6	8.16	15
OCT.	51	27	47.0	7.37	81	47	42.0	12.17	14
NOV.	47	21	55.3	8.80	61	27	55.7	11.51	10
DEC.	25	17	32.0	1.79	48	34	32.0	3.13	2
TOTAL	-	-	-	91.77	-	-	-	125.06	85
AVG.	62	32	46.4	7.65	85	45	46.8	11.37	7

COMMENTS

The average strength of the raw sewage was well below design values, with 62 ppm BOD versus 190 ppm design and 85 ppm suspended solids versus 130 ppm design. These figures indicate considerable dilution of the raw sewage.

The removal efficiencies with an average of 46.4% reduction in BOD and 46.8% in suspended solids indicate acceptable performance of the plant in view of the low strength wastes being received.

The average grit removal during 1967 was 0.14 cubic feet per million gallons of sewage received and is much below normal for this type of plant.



DIGESTER OPERATION

MONTH	SLUDGE TO DIGESTERS			SLUDGE FROM DIGESTERS			GAS PRODUCED 1000'S Cu Ft.
	GALLONS	% SOLIDS	% VOL MAT	GALLONS	% SOLIDS	% VOL MAT	
JAN	38132	6.0	67.8	-	11.0	46.5	149.000
FEB	36577	6.7	68.8	32000	11.0	45.9	131.000
MAR	33376	4.0	75.0	-	5.7	59.0	126.000
APR	41870	9.1	63.7	-	8.9	49.0	138.000
MAY	38339	6.0	60.9	-	12.1	46.7	174.000
JUNE	36679	5.9	67.2	-	12.2	45.1	168.000
JULY	38886	8.3	64.0	-	7.9	50.0	218.000
AUG.	38431	9.2	61.0	-	11.0	46.1	128.500
SEPT.	36031	8.3	61.0	44000	12.5	43.1	126.000
OCT.	38478	6.6	61.1	-	8.7	54.3	101.300
NOV.	36401	6.6	66.3	-	9.9	46.5	186.000
DEC.	38600	7.0	66.4	-	12.9	45.1	175.000
TOTAL	451800	-	-	76000	-	-	1.820,800
AVG.	37650	7.0	65.3	38000	10.3	48.1	151.733

COMMENTS

The amount of sludge pumped to the digester increased by less than 1% to 451,800 gallons in 1967 at an average solids content of 7.0%.

The gas production in 1967 was 4.03 cubic feet per gallon of sludge pumped to the digester as compared to 3.97 cubic feet of gas per gallon of sludge in 1966. The quantity of sludge hauled in 1967 decreased to 76,000 gallons from 120,530 gallons in 1966. This decrease in sludge haulage indicates that greater amounts of supernatant were returned to the primary clarifier.

The digester mixing equipment was repaired in 1967 and this contributed to increased methane gas production in the latter part of 1967.

CHLORINATION

MONTH	PLANT FLOW (MG)	POUNDS CHLORINE		
JANUARY	45.18	537	-	537
FEBRUARY	37.10	317	-	317
MARCH	49.49	264	-	264
APRIL	48.00	272	-	272
MAY	51.57	424	* 720	1144
JUNE	43.18	633	1527	2160
JULY	50.02	641	1759	2400
AUGUST	59.34	783	2349	3132
SEPTEMBER	49.46	832	2496	3328
OCTOBER	61.45	741	2223	2964
NOVEMBER	67.68	633	** 1371	2004
DECEMBER	44.70	578	-	578
TOTAL	607.17	6655	12445	19100
AVERAGE	1.66	555	1778	1592

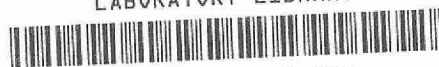
* 17 days' chlorination

** 23 days' chlorination.

COMMENTS

Chlorine was added to the effluent from May 14 to November 23 and a 15 minute residual of 0.5 ppm was maintained. The chlorine dosage is automatically controlled in direct relation to the plant flow and provides a degree of disinfection of the final effluent.

Influent chlorination is practised in order to eliminate odours within the detritor room.



CONCLUSIONS

The average daily flow for the past year was 92% of the dry weather flow. If steps are not taken to eliminate some of the infiltration gaining access to the municipal sewers the plant will be hydraulically overloaded in the near future.

The cost of operation was \$45.78 per million gallons. This is within the range expected for this type and size of plant.

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